

## REMARKS

Reconsideration and allowance of this application are respectfully requested in view of the above amendments and the following remarks.

Claims 1, 3, and 5 were rejected under 35 U.S.C. §102(b) as being anticipated by Brown, United States Patent No. 5,166,573. Claim 4 was rejected under 35 U.S.C. §103(a) as being unpatentable over Brown in view of Brimhall, United States Patent No. 6,319,020. Claim 2 was indicated as being allowable subject to presentation in independent form.

Claim 1 has been amended to distinguish from the references in much the same manner as claim 2 distinguishes. Accordingly, claim 1 is allowable. Claims 2-5, remaining dependent from claim 1, are likewise allowable.

The Office Action indicates that claims 6-10 were allowed. Claim 8 has been amended editorially without changing its substance. Accordingly, these claims remain allowable.

Minor editorial amendments have been made to the specification, without affecting the substance of the disclosure.

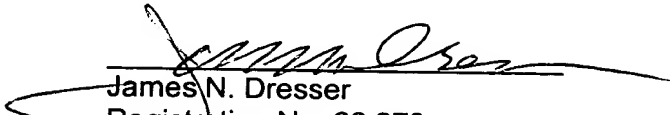
In view of the above amendments and remarks, it is respectfully urged that all of the claims are allowable and that the application is in condition for allowance. Such action would be appreciated.

Attached hereto is a marked-up version of the changes made to the specification and claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

To the extent necessary, Applicants petition for an extension of time under 37 CFR §1.136. Please charge any shortage in the fees due in connection with the filing of this paper, including extension of time fees, to

Deposit Account No. 01-2135 (Case No. 1048.39078X00) and please credit any excess fees to such deposit account.

Respectfully submitted,



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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

Please replace the paragraph beginning at page 2, line 10, with the following rewritten paragraph:

Accordingly, these objects have been achieved in the present invention by providing a flexible printed circuit board having four layers<sub>1</sub> with the outer two layers being ground planes and the inner layers carrying printed circuit lines. An array of pads [are] is provided on the end of the board for receiving piezo elements. The lines are connected to a multiplexer which sequentially accesses each line leading to the elements of the array. All other lines are connected to ground at the same time.

Please replace the paragraph beginning at page 3, line 11, with the following rewritten paragraph:

Referring now to the drawings, wherein like reference numerals designate identical or corresponding parts throughout the several views, and more particularly to Figure 1 thereof, wherein system 10 is shown as including a printed circuit board arrangement 12. The circuit board includes an array 14 of ultrasonic piezo film elements<sub>2</sub> [in an array.] For purposes of discussion, this array will be indicated as an 8 x 8 array, although any number of elements is possible. Usually, it is preferable to have as large a number as possible in order to obtain better resolution of the image. However, this is limited by the amount of space available since it is also preferable to keep the printed circuit board small for easy positioning.

Please replace the paragraph beginning at page 4, line 10, with the following rewritten paragraph:

The input lines from the cable are connected to multiplexer 24 which sequentially selects one of the input lines for connection to output line 26 which is attached to further electronic processing devices such as an amplifier. Switching device 28 is also connected to the input lines, but operates in the reverse fashion of multiplexer 24. That is, all of the input lines except the selected one are connected to ground while the switch to the selected line is left open. Address input 30 is connected to both multiplexer 24 and switch unit 28 so that the selected input line is indicated to both at the same time. The result of this is that the selected line is connected to the amplifier in a standard fashion while the remaining lines are all connected to ground. This causes all of the input lines to be grounded so that no extraneous crosstalk signals can be generated and also [to prevent any] other noise is prevented.

Please replace the paragraph beginning at page 6, line 26, and extending to page 7, with the following rewritten paragraph:

Figure 4 shows a simplified arrangement of 16 elements of an array with their connections to the multiplexer and switching units. As can be seen in this diagram, the top line which is connected at one end to array element 4 is connected at the other end in multiplexer 24 to the output line connected to an amplifier. At the same time, this same line is connected in the switching device to the only switch which is open at that time. The remaining switches are all connected to ground so that every line connected to each pad except

the selected one is grounded to prevent noise and crosstalk. Both the multiplexer and the switching element are connected to the same address line 30 so that the same line is selected in both cases. The addressing circuitry can be the same in both units. As can be appreciated, the switching unit operates in exactly the same way as the multiplexer except that it opens one switch at a time rather than closing one switch at a time.

IN THE CLAIMS:

Please amend the claims as follows:

1. (Amended) A printed circuit board for an ultrasonic array comprising:

an array of contact elements located at one end of said printed circuit board for contact with corresponding elements of said ultrasonic array;

a connector at an end of said printed circuit board opposite said array of contact elements;

a top layer and a bottom layer<sub>1</sub> each being a ground plane; and

[at least one] a plurality of internal [layer] layers between said top layer and said bottom layer and carrying thereon printed circuit lines connecting said array of contact elements with said connector.

2. (Amended) The printed circuit board of claim 1, [wherein said at least one internal layer includes] having two internal layers<sub>1</sub> with half of said contact elements being connected to lines on each layer.

8. (Amended) The system according to claim 6, wherein said printed circuit board carries a first connector at an end opposite said array for connection to said printed circuit lines<sub>1</sub> and wherein said multiplexer is connected through a cable to a second connector mateable with said first connector.